
Glocalizing visual communication in organizations

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Visual communication is increasingly being used in organizations for its unique power to attract attention, engage the audience and enhance recall and comprehension. Business visualization is by no means limited to bar charts or flowcharts, but encompasses a wide variety of forms, from mind maps, to visual metaphors, sketches, to diagrams. Visual templates based on these genres can be used for supporting collaborative tasks, such as strategy development, project management, knowledge management, learning, risk management or planning. Organizations are learning to exploit the power of visualization for communication and collaboration across organizations, and often across organizational branches that are located in different countries. As the (business) world becomes more and more flat (Friedman, 2006, p. 376), visual communication can be particularly helpful for getting a message across various cultures, thanks to its ability to convey a message with symbols and pictograms that can be – often – universally understood.

However, the impact of cultural differences on visualization interpretation is frequently overlooked (Nisbett, 2005; Eppler & Ge, 2008). In this chapter we thus aim to give an overview of how visualization can be successfully used in an international organizational context, by leveraging the universality of perception and, in particular, by addressing the major differences in the cross-cultural interpretation of visualizations.

In the following section the role of visual communication in organizations is addressed and contextualized. In the second section we specifically focus on cross-cultural similarities and differences in the reception of visualizations, and we provide a framework of seven crucial factors that moderate the efficacy of visual communication across cultures, namely: (1) color, (2) direction, (3) humor, (4) signs and symbols, (5) visual metaphors, (6) focus and (7) analytic or holistic nature of thought. For each factor we provide a theoretical overview and explain its practical implications. Finally, the last section offers a set of guidelines for supporting visualization users and developers in the evaluation and creation of business visualization suitable for a global context, thus glocalizing it – adapting a global visual business language to local contexts.

1. Visual communication in organizations

The usefulness of visual communication in business is subject to a large corpus of anecdotal evidence and growing academic interest: various classifications, taxonomies and frameworks have been developed to frame this interdisciplinary field (Tegarden, 1999; Eppler & Burkhard, 2007). The rational for the use of visualization in various contexts, including education, advertising and organizations, has to be found in its ability to enhance our cognitive abilities. Paivio’s (Paivio, 1969; Clark & Paivio, 1991) seminal work on Dual Coding Theory has lead the basis to the development, validation and increased use of visualization in education and several other fields, including organizations. The assumption of Dual Coding Theory is that information is processed through one or two channels, the verbal (textual, auditory, sequential) and the non-verbal or imagery (visual, spatial) channel, and that using both the verbal and imagery channels together increases recall, engagement and attention. Furthermore, Larkin and Simon (1987) and Tversky (2005) have stated that when visualization is used, cognitive abilities for reasoning, evaluating and solving problems are enhanced. O’Donnel et al. (2002) report that visualizations “reduce cognitive load, enhance representation of relationships
among complex constructs, provide multiple retrieval paths for accessing knowledge”. The advantages of visualization for various cognitive tasks are to be found as well in its ability to structure and organize information, and to provide salience (Green & Petre, 1996; Suthers, 2001). Salience describes how a representation facilitates focusing and processing certain information, at the expense of others. Images have an impact also on the emotional attitude of the reader, by providing engagement and motivation (Huff, 1990; Buzan & Buzan, 2002). In the field of advertising, the affective qualities of visualizations are well known and widely exploited to communicate and convince. From a more pragmatic perspective, Tufte’s popular books (1986, 1997) are a source of numerous valuable examples of information visualization use in real life, with a historical coverage from the medieval time to contemporary use.

In the specific context of organizations, visualization can be employed for communicating and collaborating effectively for the above mentioned reasons, which include – among others – superior recall, engagement, and attention, compared to textual or verbal communication. For instance visualizations can be used to communicate the company’s strategy, coordinate a team project, visualize competences and decision making (Lurie & Mason, 2007). In addition recent scientific evidence shows that visualization can be successfully used for supporting collaborative tasks (Fong et al., 2007), as for example strategizing (Platts & Tan, 2004), knowledge sharing (Bresciani & Eppler, 2009), planning (Phaal & Muller, 2007) and collaborative social network analysis (Isenberg et al., 2009). Eppler and Burkhard (2005) outline six main advantages of visualization in business collaboration, with the acronym CARMEN: Coordination, Attention, Recall, Motivation, Elaboration, New Insights.

Tegarden (1999) provides an overview of information visualization techniques that can support business problem solving by leveraging on human visual/spatial abilities: metaphors, radar charts, parallel coordinates, scatterplots, line graph, volume rendering, floors and walls, maps and surfaces. Similarly, Eppler and Burkhard (2007) developed a framework for the use for visualization in knowledge management, reviewing conceptual diagrams typically used in the business domain. Examples of business conceptual diagrams include classic pie charts, bar charts, parallel coordinates, Venn diagrams, and also less popular diagrams such as Ishikawa (also known as fishbone), synergy map, networks, and so forth. A pragmatic and detailed classification of visualization methods used in business is compiled in the Period Table of Visualization Methods (available at www.visual-literacy.org). The periodic table’s classification is a visualizations itself, an example of how a visual metaphor can be used to convey insights on the represented information based on the reader’s previous knowledge and association with the metaphor employed (Lakoff & Johnson, 1980).

Several types of metaphors are utilized in business to communicate messages and emotions, particularly in strategy communication. Visual metaphors fulfill a dual function: they position information graphically to organize and structure it, and “they convey an implicit insight about the represented information through the key characteristics (or associations) of the metaphor that is employed” (Eppler & Burkhard, 2005, p. 5). For instance, a widely used metaphor for strategy is war: the company takes the role of the conqueror, where the competition is the enemy, and the product/service market is the aspired territory. Marketing campaigns become weapons, and external changes (such as in the regulatory environment) can be visualized as adverse weather, rain and thunderstorms. The communication of the strategy to the employees becomes immediate and appealing, and can lead to higher commitment to the strategy plan. Sports are often employed metaphors for conveying the company’s future plan: soccer and baseball are among the most popular, because they are suitable to describe the company as one team, playing against another team (typically the competition). The excitement for sports game participation can be transferred to the organizational aims: the company’s employees are represented as a team with defined roles for each member; the team has a game strategy, based on the strength and weaknesses of the competing team, to achieve the “goal”. The visual metaphor projects qualities of the game to the corporate
strategy, fostering sentiments of commitment, team spirit and enthusiasm (Inns, 2002; Mengis, 2007). Sailing and climbing a mountain are other sports suitable for business use, as they focus on the team spirit and joint effort, respectively. Mergers of two companies are often envisioned a marriage, a metaphor that carries mainly positive connotation to the union but also accounts for the potential pitfalls of the relationship. The bridge is also typically used to communicate the union of two sides or the way to move to a new stage. The roadmap (Phaal & Muller, 2007) itself is a metaphor, although its literal meaning is often overlook due to its wide use in planning: the aim of this metaphor is to provide the direction, the map of the route, among the many possible roads, that the company is planning to take. Finally, other business metaphors include the domain of the car (starting the engine, racing, making a pit-stop), iceberg (as in “the tip of the iceberg” or used to differentiate obvious/visible from hidden elements) and gardening (sowing, blooming, trimming dead branches), among others.

In this section we have reviewed how visualization, from charts to visual metaphors, can be employed in organizations to communicate and collaborate effectively and to attract the attention of the employees, engage and motivate them. As the power of visualization has been widely acknowledged and diagrams are broadly used (in western countries) for communicating effectively and for engaging employees, several organizations are now employing the same graphic representations in all their international branches. This poses the question of whether pictures are indeed a universal language, a sort of Esperanto composed of signs, pictograms and metaphors that can be employed without adaptation in all cultural context. Against this widespread belief that pictures carry universal communication values, recent research (Nisbett, 2005) shows that there are fundamental differences in the perception of visualization between East Asia and the Western world. In the next session, we address this topic specifically and give an overview of the major issues of using visualization in intercultural contexts.

2. Business Visualizations in Different Cultures

“A picture is worth a thousand words”. This is claimed to be a Chinese proverb, however Chinese people seem to have never heard of it (Larkin & Simon, 1987, p. 65). And we could further question, which thousand words? Are they the same in Asia and in Western countries? And does it not sometimes take a thousand words to understand a complex image or one that originated in another cultural context?

Certain characteristics of visual communication are undoubtedly universal and can therefore be particularly useful in cross cultural context. Visualization is immediate and can cut across language barriers: pictograms are typical examples of this. They can be found in most international airports and they are created with the purpose to be understood without knowing the local language. But the usefulness of visual communication can go far beyond pictograms: it can be employed for instance to communicate a sequence of actions graphically (i.e. with a flowchart) or to evoke particular feelings through a visual metaphor or image. In cross-cultural communication, visualizing ideas can be especially useful to externalize knowledge: when ideas are graphed (for example with a knowledge map), it is easier for the readers to identify differences between the visualized concepts and their own cognitive model, rather than when words alone are used (Schnotz & Kurschner, 2008).

In spite of relatively universal visualization principles, and despite the fact that visualization is often considered a global language, dissimilarities in the interpretation of visualizations in different cultures do exist (Segall et al., 1966; Nisbett, 2005) and should be taken into consideration in organizational communication, in order to properly evaluate when and how to adapt visuals to local cultures. Messaris (1997) reports, citing Scott, that “Academic writers have long insisted that the conventions of pictorial representation are culture-bound (Scott, 1990)”. These cultural
dissimilarities are a consequence of traditions, education and argumentative style. Segall et al. (1966) state this in similar terms: “It should be stressed that these differences are not “racial” differences. They are differences produced by the same kinds of factors that are responsible for individual differences in illusion susceptibility, namely, differences in experience.” Certainly culture -primarily through education- influences the very interpretation of visualizations: “the meaning of a map is not absolute but a product of the society and its culture” (MacEacheren 2004).

The implications of culture on visualization reception can be summarized in at least seven main factors, ranging from well known aspects as the use of color and directionality of reading, to more dramatic differences in attention patterns (background and foreground) and thinking styles (analytic and holistic). In the following paragraphs each of the seven factors is addressed from both a theoretical and practical perspective, in a sequence from the more perceptual to the deeper cognitive differences.

1. The most apparent element of cultural differences is the meaning of color: it is well known that the use of red in western countries is a sign of danger, love, required attention, or negative values. The contrary is true in China were red has a marked positive connotation. In Buddhist countries yellow and orange are colors typically associated with religion and god (Hogan, 2007), and orange is as well associated with religion in Ireland. In the U.S. it is a service color and in Switzerland is the color used by the main supermarket chains. White symbolizes death in East Asia, while it has an opposite connotation in Western countries, typically associated with purity, cleanliness and elegance. Green symbolize hope and spring in most Western countries. Therefore the safest color to be used in international visualizations is probably blue, as it carries slightly positive connotations in most cultures and is often considered elegant and conservative.

2. A second prominent element to take into account is the direction in which a visualization is read, especially if it is composed by procedural elements, like a flowchart or a timeline. In Arabic and traditional Chinese the typical reading pattern is from right to left, the opposite of the western convention of reading from left to right. This has implications in portraying time and the sequence of events that might create misunderstanding. When addressing Arabic speakers, the linear order of diagrams should be reversed (from left to right) as in the following figure (Fig. 1).

![Figure 1. Arabic diagram (Source: United Nations ESCWA public report)](image)

3. Icons and symbols are not as universal as usually considered: for example the symbol of the dollar ($) is universally used for indicating money, but most countries use other currencies (like € or £). Similarly the pictogram of fork and knife symbolizes food or restaurant, however Asians (among others) perceive the icon as a foreign visual, and chopsticks would be a more appropriate symbol. The abstract figure of man and woman carries cultural characteristics, because the dressing style, especially of women, can be different in non-western cultures. Finally, symbols can be ambiguous,
as interpreted in diverse ways in different cultures (Eppler et al., 2008): for example the icon of a star can denote a particularly good element in North America (for example stars are used for online rating), but might be interpreted as simply symbolizing the night in other countries. Consequently when icons and symbols are used in organizational communication, they should be adapted to the local culture which might have different conventions.

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4. Shifting the focus more toward the meaning of the visual message, a further element to consider is the use of humor, which is known to be culturally dependent. For instance vignettes that portray humorous scenes to convey a message may not obtain the same effect in all countries. In the United States it is typical and welcome to use humor in business conversations (Lewis, 1999), but in many other countries it is perceived as inappropriate and might not even be understood as humor. The lesson for business visual communication is to avoid or carefully dose humor, as it can cause ambiguity, misunderstandings or even offense (Barnard, 1995).

5. **Visual metaphors** offer a valuable support for communicating in different cultures, thanks to their unique ability to conveying meaning by providing “the path from the understanding of something familiar to something new by carrying elements of understanding from the mastered subject to a new domain” (Eppler & Burkhard, 2005, p. 5). However metaphors fulfill their function only if they can be understood cross-culturally (Hogan 2007). Although visual metaphors of natural scenes and phenomena (i.e. mountain, weather, tree) may well be applied in different countries, metaphors of concepts and man-made objects may at times be more problematic. The metaphor of war for strategy communication, described at the beginning of the chapter, is so widespread in the United States that it is almost a convention to speak about strategy in military terms, but it may seem too aggressive and inappropriate in more peaceful cultures (Beamer & Varner, 2008, p. 85).

Sports metaphor may be helpful to convey a team spirit and team strategy, however only a handful of sports are well known globally (Beamer & Varner, 2008), and they may appeal more to men than to women (Hogan, 2007). For instance most people from non English speaking countries may not be familiar with baseball and cricket. The well known concept of the iceberg (as in the “tip of the iceberg”) is strongly cultural, as it has been made popular in the Western world by Freud’s iceberg model. The metaphor itself is not transparent and may not be readily understood by all cultures without explicit explanation (Barnard, 1995). Similarly, the meaning of “bottom line” is a product of American culture and is not understood, and possibly cannot even be translated in most languages. The idea of the “Trojan horse”, heredity of Greek history, cannot be expected to be well known outside of Europe. Another visual “false friend” is the concept of dog: although in Western countries dogs have a positive connotation, such as loyalty and obedience, for Muslims dogs carry mainly negative associations (i.e., they are considered dirty animals). Similarly, the St. Bernard dog is only known in Europe and a handful of other countries as a rescue dog that is employed to save human lives (Hogan, 2007), and it cannot be expected that the metaphors is understood in Asia or Africa. Heaven and hell are as well a product of culture and traditions, which finds its origin in Christianity: it is therefore not a suitable metaphor to be used in countries where there are other dominant religions. Finally, metaphors developed in Asia may not be successfully employed in Western countries without explanation: for instance the idea of Mandala (Dellios, 1997) is well known across Asia, but it is typically unfamiliar to Westerners. It symbolizes a harmonic integration, unity without defeating the individual parts. The use of colorful powder for the creation of a Mandala can also be seen as symbolizing fragility and impermanence. Another “Asian” metaphor is reported by Hogan (Hogan, 2007, p. 116): “Sangam signifies the meeting point of different rivers coming from diverse sources […] whilst you can still see each river with its own separate identity, at the same time you experience the dramatic impact as the rivers flow together and see the strength that in generated in the confluence – that togetherness– as the rivers merge and join the ocean. (Chakrabarti, 2005, p. 5)”
The aim here is not to provide a comprehensive list of metaphors, but rather to sensitize the reader to their use in cross-cultural context. Metaphors of the natural environment are among the safest to be used in diverse countries. On the contrary, religious and war-related metaphors should be avoided. When possible the meaning of the metaphor should be checked with locals, to ensure that it does not carry unwanted meanings, and that it is self-explanatory.

The deepest differences in the interpretation of visualization artifacts are not at perceptual level, but are rooted in difference in reasoning patterns, mainly between East Asia and the Western world. Segall at al. (1966), and more recently Nisbett and colleagues (Chua et al., 2005; Nisbett, 2005; Masuda & Nisbett, 2006) found evidence that “perceptual processes are influenced by culture. Westerners tend to engage in context-independent and analytic perceptual processes by focusing on a salient object independently of its context, whereas Asians tend to engage in context dependent and holistic perceptual processes by attending to the relationship between the object and the context in which the object is located.” (Nisbett & Miyamoto, 2005). Differences in perception are the effect of dissimilar thought patterns of Asia and Western countries, which are tracked back to the argumentative tradition of Confucius and the Ancient Greeks, respectively. The consequences for visualization are identified at two related levels: focus of attention and analytic versus holistic type of thinking.

6. Following Nisbett’s argumentation and findings, Westerners are more inclined to focus, pay attention and remember the central elements in an image, whereas East Asians focus equally on the background area. This preference of focus on the background or on the foreground is also known as field dependence-independence, a concept developed by Witkin and Berry (1975). Cross-cultural studies relate this factor to social conformity in the society (Smith & Bond, 1993): collectivistic societies (like most of Asia) are found to focus typically more on the background with respect to individualistic societies (like Western countries): “With a degree of regularity, the results of these studies are consistent with the starting hypothesis relating field dependence-independence and restructuring ability to extent of stress on social conformity in the society” (Witkin & Berry, 1975, p. 89). Different researchers have investigated if this differences in attention and recall are due to actually looking at different items: they analyzed the eye movements of East Asians and Westerners and arrived to the same findings, that the focus of attention is broader for Asians, as they actually look more at background elements (Chua et al., 2005; Raynera et al., 2007). Research on change blindness provides similar findings, with Americans detecting a greater number of changes in the central objects, while Japanese in the background and in the relationships between objects. These findings unveil substantial different styles of attending information (Masuda & Nisbett, 2006).

The implications of these findings are relevant for organizational communication: if the same business visualization or diagram is used, Asians and Westerners will nevertheless look primarily at different items in the same visualization. In general Asians pay attention to the background, while Westerners do not. Therefore important information should not be placed on the background when communicating in Western countries because it will probably be overlooked. Conversely, when placing items in the background of a diagram, Westerners may imply that they are less relevant, while Asians will pay equal attention to the background as to the foreground objects.

7. A second major difference identified by Nisbett is related to the nature of thought: Westerners favor an abstract and analytic type of reasoning, based on rules and categorization, while East Asians are more inclined to a holistic view of the world, to focus on relationships and similarities (Nisbett & Miyamoto, 2005). These differences are argued to be the consequence of the influence of prominent philosophers in Ancient Greece and China over 2500 years ago. Ancient Greeks emphasized freedom and individuality, and viewed argumentation and criticism of others’ point of view as a way to advance knowledge. Chinese were concerned primarily with social harmony, and
therefore public criticism and disagreement were discouraged. Edward T. Hall (1976) defines Western countries as “low-context” cultures and Asians (among others) as “high-context” societies, to express the difference in social ties and self-understanding. This concept is related to Hofstede’s Individualism cultural dimension (Hofstede, 2001). Secondly, in China abstraction was discouraged, and elements had to be seen in their context: typically stories were used to convey messages, and pragmatic solutions were developed ad hoc for each specific problem. The Greeks, on the other hand, engaged in theory, investigation, formal logic and focused on abstracting and categorizing the world. The consequences are reflected still nowadays by how Europeans compared to Asians make sense of the world and draw causal inferences: Westerners often overlook the influence of context and are interested in generalization, while Asians typically consider the broad context of each object and are comfortable with contradictory propositions. Trompenaars labels this aspect as “specific” versus “diffuse” culture: “People from specific cultures start with the elements, the specifics. First they analyze them separately, and then they put them back together again”, “People from diffusely oriented cultures start with the whole and see each element in perspective of the total. All elements are related to each other” (Trompenaars & Hampden-Turner, 1998).

When communicating with visuals across cultures one should take into consideration these fundamental differences in these modes of thought: while Westerners are inclined to seek abstractions and categorizations in formal diagrams, Asians prefer to have more contextual elements and emphasize relationships, such as by emphasizing links between items in a visualization. Linear and abstract diagrams should be favored by Americans and Europeans (i.e. flowchart and timeline), while Asians might prefer relationship diagrams and radial maps (i.e. causal loop and mind map) and visual metaphors that convey relationships and associations of meanings. Utilizing a diagram that is not culturally appropriate can eliminate the advantages of visual communication and even lead to a negative effect if it interferes with the existent mental model of the reader (Schnotz & Kurschner, 2008).

This section has provided a description of seven crucial factors that have to be addressed for “glocalizing” visual communication in organizations. An overview of theoretical motivations and their respective practical implications of differences in the reception of visual communications across cultures have been offered. The following final part provides a summary of guidelines that emerged from the above factors as well as some concluding remarks.

3. Guidelines and Conclusion

The seven main factors influencing the effectiveness of visualization in intercultural contexts can be used as a framework for evaluating, choosing and modifying business visualizations that are aimed to be used globally. Insights from the theoretical motivations and practical implications exposed above are relevant for visualization and presentation developers, and can be used as a checklist against which to evaluate business graphs suitable for multi-cultural settings.

The following table (Tab. 1) summarize the key practical insights for each factor:

<table>
<thead>
<tr>
<th>Factor</th>
<th>Guidelines</th>
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<tbody>
<tr>
<td>1. Color</td>
<td>Blue is the safest business color. Red has opposite meaning in China and Western countries: if used, its meaning should be made explicit.</td>
</tr>
<tr>
<td>2. Direction</td>
<td>Conventionally left to right but the contrary in Arabic: order should be reversed when addressing Arabic cultures.</td>
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</tbody>
</table>
The function of the factors description and consequent guidelines is to provide a general overview of the main issues in visual business communication. Nevertheless generalizations about cultures always fall in the danger of oversimplification. The concept of “Asian” itself encompasses an enormous variety of cultures, from the Middle East, to India and China, with immensely different traditions, history and educational systems. Therefore, the insights and guidelines provided here should be complemented with specific knowledge on the target cultures, and possibly a pre-check of the visualization with locals.

This chapter has addressed the use of visualization in business contexts for communicating and collaborating across cultures. The power of visualization to efficiently convey meaning, facilitate understanding, enhance recall and provide engagement can be exploited in a global context, however visualizations need to be adapted to local cultures. As ambiguity and misunderstanding may arise from different interpretations of a diagram, we have introduced a framework of seven major factors that should be considered when producing or evaluating business diagrams and visual metaphors for international use. This seem a prominent topic in the globalized economy, where a large and growing number of companies are operating internationally and at multinational levels, and need to communicated effectively in a variety of cultures. Visualization can offer a tremendous support in global communication for its intrinsic ability to cut across cultures without translation, however its efficacy can only be fully exploited through the careful adaptation to the local context.

<table>
<thead>
<tr>
<th>3. Humor</th>
<th>Should be avoided or used with great caution.</th>
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<tr>
<td>4. Signs and symbols</td>
<td>Need to be localized (for example using the symbol of chopsticks instead of fork and knife in East Asia).</td>
</tr>
<tr>
<td>5. Visual metaphors</td>
<td>Metaphor of war, non well known sports, and religion should be avoided. Suitable metaphors are for instance: mountain, weather, garden, bridge.</td>
</tr>
<tr>
<td>6. Focus</td>
<td>Be aware that objects in a background area of a picture receive equal attention as objects in the foreground by Asians (attributing the same relevance), but are likely to be ignored by Westerners.</td>
</tr>
<tr>
<td>7. Analytic-holistic nature of thought</td>
<td>Westerners prefer abstract and analytic diagrams, while East Asians prefer visualizations that show relationships and context.</td>
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References


